Name: _____ **Automotive Technology/Four Main Areas**

Directions:
Evaluate the student by checking the appropriate number to indicate the degree of competency. The rating for each task should reflect employability readiness rather than the grades given in class.

Student Rating Scale:

- **0 No Exposure** – no experience/knowledge in this area; program/course did not provide instruction in this area
- **1 Unsuccessful Attempt** – unable to meet knowledge or performance criteria and/or required significant assistance
- **2 Partial Demonstration** – met some of the knowledge or performance criteria with or without minor assistance
- **3 Knowledge Demonstrated** – met knowledge criteria without assistance at least once
- **4 Performance Demonstrated** – met performance criteria without assistance at least once
- **5 Repetitive Demonstration** – met performance and/or knowledge criteria without assistance on multiple occasions
- **6 Mastered** – successfully applied knowledge or skills in this area to solve related problems independently

NOTE: This profile contains Introduction to Automotive Technology and the four main areas according to the National Automotive Technicians Education Foundation (NATEF).

NOTE: The Roman numerals are not sequential as they correspond to the NATEF Task List Areas.

INTRODUCTION TO AUTOMOTIVE TECHNOLOGY

0	1	2	3	4	5	6	**A. Appreciate and apply all personal and workplace safety procedures**	**Notes:**
							1. Describe how to use chemicals safely	
							2. Demonstrate the safe use of hand tools	
							3. Demonstrate the safe use of power tools	
							4. Practice the safe use of personal protective equipment (i.e., clothing and safety glasses)	
							5. Describe how to use fire protection equipment safely	
							6. Demonstrate the safe use of shop equipment	
							7. Comply with personal and environmental safety practices in accordance with federal, state, and local safety and environmental regulations/guidelines	
							Other:	

0	1	2	3	4	5	6	**B. Perform automotive business tasks**	**Notes:**
							1. Demonstrate effective communication skills (oral and written)	
							2. Prepare work orders and estimates	
							Other:	

0	1	2	3	4	5	6	**C. Describe the various vehicle systems and their operations**	**Notes:**
							1. Identify the basic function and operation of the different vehicle systems	
							Other:	

0	1	2	3	4	5	6	D. Demonstrate employability skills	Notes:
							1. Demonstrate a good work ethic (i.e., relations with other, dependability, attitude, and personal hygiene)	
							2. Demonstrate teamwork	
							3. Demonstrate job-seeking techniques (i.e., write a resume, search for a job, arrange references, and apply interview techniques)	
							Other:	

IV. STEERING AND SUSPENSION

0	1	2	3	4	5	6	A. Diagnose general suspension and steering systems	Notes:
							1. Identify and interpret steering and suspension concerns; determine necessary action	
							2. Research applicable service information, locate and interpret identification numbers, certification, and calibration decals.	
							Other:	

0	1	2	3	4	5	6	B. Diagnose, maintain, and repair steering systems	Notes:
							1. Diagnosis and repair supplement restraint system (SRS)	
							2. Diagnosis and repair steering column and steering shaft	
							3. Test and diagnose electronically controlled steering systems	
							4. Diagnose and repair power steering hydraulic systems	
							5. Diagnose and repair power steering pump	
							6. Diagnose and repair manual and power steering gear (non-rack and pinion)	
							7. Diagnose and repair manual and power steering gear (rack and pinion)	
							8. Inspect and replace steering linkage components	
							Other:	

0	1	2	3	4	5	6	C. Diagnose, maintain, and repair suspension systems	Notes:
							1. Diagnosis and repair electronically controlled suspension systems	
							2. Diagnosis and repair short and long arm suspension systems	
							3. Diagnosis and repair strut suspension systems	
							4. Diagnosis and repair strut rods and stabilizer bars	
							5. Remove, inspect, and install steering knuckles	
							6. Remove and inspect spring assemblies (coil, leaf torsion bar, and transfer)	
							7. Inspect, remove, and replace shock absorbers (front and rear)	

							8. Remove, inspect, and replace front and rear wheel bearings	
							9. Lubricate steering and suspension systems	
							Other:	

0	1	2	3	4	5	6	**D. Diagnose and repair wheel alignment**	**Notes:**
							1. Differentiate between steering and suspension concerns	
							2. Diagnose steering and tire wear problems and determine necessary action	
							3. Check front wheel set back and cradle (subframe) alignment	
							4. Perform alignment procedures; set correct alignment angles	
							Other:	

0	1	2	3	4	5	6	**E. Diagnose and repair wheels and tires**	**Notes:**
							1. Diagnosis and inspect tire wear and inflation; perform necessary actions	
							2. Diagnosis and repair wheel/tire vibration, shimming, and noise	
							3. Rotate tires following manufacturer's specifications	
							4. Diagnose and repair vehicle pull (lead) problems	
							5. Remove, inspect, and repair tire and wheel assemblies	
							Other:	

V. BRAKES

0	1	2	3	4	5	6	**A. Diagnose general brake systems**	**Notes:**
							1. Identify and interpret brake system concern; determine necessary action	
							2. Research applicable service information, locate and interpret identification numbers, certification, and calibration decals	
							Other:	

0	1	2	3	4	5	6	**B. Diagnose and repair hydraulic system**	**Notes:**
							1. Diagnose pressure concerns using hydraulic principles; determine necessary action	
							2. Measure brake pedal height; determine necessary action	
							3. Remove, inspect, bench bleed, and install the master cylinder	
							4. Diagnose hydraulic brake system concerns; determine necessary action	
							5. Inspect brake lines, hoses, fittings, and supports; replace and tighten as needed	
							6. Select, handle, store, and fill brake fluids	
							7. Inspect, test, and replace the values (metering, proportioning, pressure differential, and combination valves)	

							8. Inspect, test, and replace components of the brake warning light system	
							9. Bleed and flush the hydraulic system	
							Other:	

0	1	2	3	4	5	6	**C. Diagnose and repair drum brakes**	**Notes:**
							1. Diagnose drum brake system concerns; determine necessary action	
							2. Remove, clean, inspect, and measure brake drums; refinish as necessary	
							3. Remove, clean, inspect, and adjust brake shoes and related hardware	
							4. Remove, inspect, and install wheel cylinders	
							5. Install the wheel; torque lug nuts; make final checks and adjustments	
							Other:	

0	1	2	3	4	5	6	**D. Diagnose and repair disc brakes**	**Notes:**
							1. Diagnosis disc brake system concerns; determine necessary action	
							2. Remove, clean, lubricate, and inspect the caliper; replace as needed	
							3. Remove, clean, and inspect pads and retaining hardware; determine necessary action	
							4. Clean, inspect, and measure rotor; remove, refinish, and reinstall as necessary	
							5. Adjust calipers equipped with an integrated parking brake system	
							6. Install the wheel; torque lug nuts; make final checks and adjustments	
							Other:	

0	1	2	3	4	5	6	**E. Diagnose and repair power assist units**	**Notes:**
							1. Diagnose vacuum power assist units concerns; determine necessary action	
							2. Diagnose hydro-boost system concerns; determine necessary action	
							Other:	

0	1	2	3	4	5	6	**F. Diagnose and repair miscellaneous brake-related components**	**Notes:**
							1. Diagnose wheel bearing noises and vibration concerns; determine necessary action	
							2. Remove, clean, inspect, repack, and install wheel bearings, seals, and hubs	
							3. Inspect, clean, lubricate, adjust, and replace parking brake cables and components; check operation of the parking brake indicator light system	
							4. Check operation of the stop light system; determine necessary action	
							5. Inspect and replace wheel studs	

							Other:	

0	1	2	3	4	5	6	G. Diagnose and repair antilock brake and traction control systems	Notes:
							1. Diagnose antilock brake system concerns (consider vehicle modification); determine necessary action	
							2. Identify and inspect antilock brake system (ABS) components; determine necessary action	
							3. Diagnose ABS electronic controls using self-diagnostic and/or recommended test equipment; determine necessary action	
							4. Depressurize, bleed, remove, and install ABS components	
							5. Test, diagnose, and service ABS speed sensors using a multimeter and oscilloscope	
							6. Identify traction control system components	
							Other:	

VI. ELECTRICAL/ELECTRONIC SYSTEMS

0	1	2	3	4	5	6	A. Diagnose general electrical systems	Notes:
							1. Identify and interpret electrical/electronic system concern; determine necessary action	
							2. Research applicable service information, locate and interpret identification numbers, certification, and calibration decals.	
							3. Diagnose electrical/electronic integrity of circuits using principles of electricity and wiring diagrams	
							4. Demonstrate the proper use of a digital multimeter during electrical circuit diagnosis	
							5. Check and measure electrical circuits using a test light, voltmeter, ammeter, and ohmmeter	
							6. Check electrical circuits using a fused jumper wire; inspect and test fusible links circuit breakers, and fuses; determine necessary action	
							7. Locate and measure shorts, grounds, opens, resistance parasitic draw in switches, connectors, relays, solid-state devices, and wires	
							8. Repair wiring harness and connectors; perform solder repair of electrical wiring	
							Other:	

0	1	2	3	4	5	6	B. Diagnose and service batteries	Notes:
							1. Perform battery state-of-charge and capacity test	
							2. Maintain or restore electronic memory functions	
							3. Inspect, clean, fill, replace, and charge the battery	
							4. Inspect, clean, and secure cables, connectors, clamps, and hold-downs; repair or replace as needed	
							5. Start a vehicle using jumper cables or an auxiliary power supply	

							Other:	

0	1	2	3	4	5	6	C. Diagnose and repair starting systems	Notes:
							1. Perform starter current draw and circuit voltage drop tests; determine necessary action	
							2. Inspect and test the starter components, relays, and solenoids; determine necessary action	
							3. Remove and install the starter	
							4. Differentiate between electrical and engine mechanical problems that cause slow-crank or no-crank	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair charging system	Notes:
							1. Perform charging system tests- output, undercharge, no-charge, overcharge, and voltage drop; determine necessary action	
							2. Remove, inspect, adjust, and install the generator (alternator) and components	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair lighting systems	Notes:
							1. Diagnose lighting system problems; determine necessary action	
							2. Inspect, replace, and aim headlights and bulbs	
							3. Inspect and diagnose turn and hazard lighting systems; perform necessary action	
							Other:	

0	1	2	3	4	5	6	F. Diagnose and repair gauges, warning devices, and driver information systems	Notes:
							1. Inspect and test gauges, sending units, connectors, wires, and printed circuits; determine necessary action	
							2. Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action	
							Other:	

0	1	2	3	4	5	6	G. Diagnose and repair horn and wiper/washer systems	Notes:
							1. Diagnose incorrect horn operation; perform necessary action	
							2. Diagnose incorrect wiper/washer operation; perform necessary action	
							Other:	

0	1	2	3	4	5	6	H. Diagnose and repair automobile accessories	Notes:
							1. Diagnose and repair motor driven accessory circuits, heated accessories, electric locks, cruise control, radios, body electronics, communication systems, and anti-theft systems	

							2. Diagnose supplemental restraint system concerns; determine necessary action	
							3. Disarm and enable the air bag system for vehicle service	
							Other:	

VIII. ENGINE PERFORMANCE

0	1	2	3	4	5	6	**A. Diagnose general engine functions**	**Notes:**
							1. Identify and interpret engine performance concern; determine necessary action	
							2. Research applicable service information, locate, and interpret identification numbers, certification, and calibration decals.	
							3. Perform engine performance test/inspection; determine necessary action	
							Other:	

0	1	2	3	4	5	6	**B. Diagnose and repair computerized engine controls**	**Notes:**
							1. Retrieve, record, and clear stored diagnostic codes on OBD I and OBD II systems	
							2. Diagnose emissions and driveability concerns with stored and non-stored diagnostic trouble codes; determine necessary action	
							3. Check for module communication errors and interpret scan tool data	
							4. Inspect, test, and repair computerized engine control system sensors, control modules, and circuits using a graphing multimeter and digital storage oscilloscope	
							5. Access and use service information to perform step-by-step diagnosis	
							6. Diagnose driveability and emissions problems resulting from malfunctions of interrelated systems; determine necessary action	
							Other:	

0	1	2	3	4	5	6	**C. Diagnose and repair ignition system**	**Notes:**
							1. Diagnose ignition system related problems on vehicles with electronic ignition (EI) systems; determine necessary action	
							2. Diagnose ignition system related problems on vehicles with distributor ignition (DI) systems; determine necessary action	
							3. Inspect and test ignition primary and secondary circuit wiring and components; perform necessary action	
							4. Inspect, test, and service the distributor	
							5. Check and adjust ignition system timing and timing advance/retard	
							Other:	

0	1	2	3	4	5	6	D. Diagnose and repair fuel, air induction, and exhaust systems	Notes:
							1. Diagnose driveability problems related to carburetor-type fuel systems; determine necessary action	
							2. Diagnose driveability problems related to injection-type fuel systems; determine necessary action	
							3. Replace components related to carburetor-type fuel systems; make required adjustments	
							4. Replace components related to injection-type fuel systems; make required adjustments	
							5. Test electronic fuel, air induction, and fuel-delivery components, and circuits; determine necessary action	
							6. Inspect and test the exhaust system; determine and perform necessary action	
							Other:	

0	1	2	3	4	5	6	E. Diagnose and repair emissions control systems	Notes:
							1. Diagnose emissions control systems; determine necessary action	
							2. Inspect, clean, and replace Positive Crankcase Ventilation (PCV) system components	
							3. Inspect, clean, and replace electrical/electronic components of the Exhaust Gas Recirculation (EGR) system	
							4. Inspect and replace the exhaust system	
							5. Inspect, clean, and replace the air management system	
							6. Inspect, clean, and replace the intake air temperature control	
							7. Inspect, clean, and replace fuel vapor controls	
							Other:	

0	1	2	3	4	5	6	F. Conduct miscellaneous engine service	Notes:
							1. Adjust valves on engines with mechanical or hydraulic lifters	
							2. Remove and replace the timing belt; verify correct camshaft timing	
							3. Remove and replace the thermostat	
							4. Inspect and test mechanical/electrical fans and their components; perform necessary action	
							Other:	

0	1	2	3	4	5	6	Demonstrate leadership skills in the classroom, industry, and society	Notes:
							1. Demonstrate an understanding of SkillsUSA-VICA, its structure, and activities	
							2. Demonstrate an understanding of one's personal values	
							3. Perform tasks related to effective personal management skills	

							4. Demonstrate interpersonal skills	
							5. Demonstrate etiquette and courtesy	
							6. Demonstrate effectiveness in oral and written communication	
							7. Develop and maintain a code of professional ethics	
							8. Maintain a good professional appearance	
							9. Perform basic tasks related to securing and terminating employees	
							10. Perform basic parliamentary procedures in a group meeting	
							Other:	

NOTE: These competencies are addressed in the Missouri SkillsUSA-VICA Curriculum Guide lessons.